PUBLIC SERVICE COMMISSION OF WISCONSIN

Memorandum

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FOR COMMISSION AGENDA

TO: The Commission

FROM: Robert Norcross, Division Administrator
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Gas and Energy Division

RE: Quadrennial Planning Process 5-GF-191

Phase Two – Evaluation Issues

2005 Wisconsin Act 141 (Act 141) requires that the Commission conduct a review of energy efficiency and renewable resource programs at least once every four years. The Commission is required to evaluate all of the energy efficiency and renewable resource programs and determine their appropriate goals, priorities, and measurable targets. The Commission is addressing these requirements in two phases. At its open meeting of September 17, 2009, the Commission dealt with Phase One by making several broad policy decisions in order to guide the discussion in Phase Two on the programmatic issues.

In Phase One of the Quadrennial Planning Process, the Commission decided it would first establish energy savings goals for energy efficiency and customer-sited renewable resource programs, and then determine the funding commitments necessary to achieve those goals. This is a departure from the previous practice of establishing funding commitments based on the statutory formula (1.2 percent of operating revenues), and it introduces new and complex issues for the planning and program evaluation processes. In Phase Two of the planning process, the energy efficiency and renewable resource savings goals and the corresponding budgets to achieve these goals will be established.

In order to establish appropriate energy efficiency and renewable resource savings goals and the corresponding budgets, it is essential to first determine how these savings will be valued and measured. At its open meeting of July 8, 2010, the Commission made several decisions regarding the evaluation of energy efficiency and renewable resource programs. These decisions will guide the next portion of Phase Two, which will establish the goals and budgets of the programs. The decisions regarding measurement and evaluation of the program savings are summarized as follows:

I. What should be the goals of the energy efficiency and renewable resource program evaluation?

The appropriate evaluation goals are to: (1) measure and document the effects attributable to the program; (2) provide data needed to assess cost-effectiveness; and (3) provide ongoing feedback and guidance to the program administrator regarding program design, delivery, and efficiency of operations. Special emphasis is to be placed on: (**1) measuring and documenting energy and peak demand savings attributable to the program; (2) documenting whether statutory goals have been met; (3) providing data needed to assess cost-effectiveness; and (4) providing ongoing feedback and guidance to the program administrator. An Evaluation Work Group (Work Group) will be established to advise the Commission on measurement and evaluation issues.**

The three general goals of the energy efficiency and customer-sited renewable resource programs are stated very broadly. Requiring the evaluation to place special emphasis on the four more specific evaluation objectives, as outlined above, will ensure that sufficient evaluation resources will be directed at those activities needed to value and measure the ability of energy efficiency and renewable resources to contribute to meeting the energy needs of the state. This is consistent with the Commission's Phase One decision that while non-resource benefits such as emission reductions and job creation are important, the primary goal of the energy efficiency and customer-sited renewable resource programs is acquisition of kilowatts, kilowatt hours, and therms.

A Work Group is needed to address evaluation issues over time. The Commission approved the use of such a group, provided that its work is narrow in scope. Specific issues to be addressed by the Work Group, as identified in the Commission's decisions on the remaining evaluation issues, are: (1) development of new guidelines for selecting the appropriate attribution measurement method(s); (2) review the current application of the self-report and market data methods used in other states and recommend changes to improve the accuracy of Wisconsin's evaluation results; (3) review detailed evaluation plans to ensure that they meet the new evaluation framework; (4) review the methods used to measure the gross savings of the programs and recommend changes; and (5) consider alternatives to the current approach of documenting life-cycle savings and recommend modifications. The Work Group is to consist of up to six members. A Commission staff representative, to be appointed by the Division Administrator of the Gas and Energy Division, will serve as chairperson of the Work Group. The Work Group will include a representative of each Program Administrator,[1] an Evaluation Contractor representative, and a utility representative. Additionally, should he agree, Mr. George Edgar will be a member.[2] Should Mr. Edgar not be available to participate in the Work Group, the Division Administrator will propose, for Commission approval, an industry expert alternate.

[1] Currently there is a single Program Administrator for the Residential and the Business Programs. This Program Administrator shall have one representative. If there are two Program Administrators in the future, each Program Administrator shall have a representative on the Evaluation Work Group.

[2] Membership of Mr. Edgar on the Evaluation Work Group is being requested based on his knowledge of energy efficiency and renewable resources, and in particular, evaluation issues. As such, he will not be representing WECC on the work group.

II. What are the appropriate evaluation metrics?

A) How should energy "savings" be quantified?

1) What are the appropriate savings metrics?

Net savings are to be used to determine measure and program cost-effectiveness, to inform continual improvement of program design, and for public policy decision making. Gross metrics are appropriate in the context of contract goals.

Because net savings reflect the true impact of the programs, it is important to use them to determine cost-effectiveness, to inform continual program improvement, and for public policy decision making. However, contract goals should be on a gross basis. Net savings are inherently difficult to measure. Measuring net savings to determine if the program administrator is meeting contract goals would involve too many variables that are outside the Program Administrator's control and could create considerable risk to the Program Administrator if payment is tied to achievement of net goals. Also, establishing net contract goals can lead to unintended results. For example, the Program Administrator could walk away from a viable project because of concern that the program will get little or no credit for the savings from the project.

2) How should attribution, or net savings, be measured?

The Evaluation Work Group shall develop new guidelines for selecting the appropriate attribution measurement method(s). This work group should also: (a) review the current application of the self-report and market data methods used in other states and recommend changes to provide more confidence in the results of these methods; (b) review the detailed evaluation plans to ensure that they meet the new evaluation framework; and (c) review the methods used to measure the gross savings of the programs and recommend changes.

There are advantages and disadvantages to each of the program attribution evaluation methods. Self-report surveys perform well to obtain facts from program participants that can easily be corroborated. However, use of self-report surveys to ascertain what an individual would have done in the absence of the program has several disadvantages. Self-reports may

contain biases that are difficult to control in a battery of survey questions. These biases include: (1) participant self-selection bias; (2) participants providing answers they perceive to be the most socially acceptable; and (3) participants not being able to reliably recall why a particular decision was made in the past.

The main advantage of using sales data or other market intelligence to determine program attribution is that it reflects customers' actual decisions, rather than relying on participants' reported behaviors. However, determining the baseline of what would have occurred in the absence of the program and gaining access to relevant unbiased sales data can be difficult.

Given the concerns regarding the attribution evaluation methods, it is appropriate for the Work Group to develop new guidelines for selecting the appropriate method(s) to evaluate energy efficiency and customer-sited renewable resource programs. The Commission questioned the validity of relying primarily on self-report methods to determine program attribution. The guidelines developed by the Work Group should address using multiple evaluation methods, particularly when use of any one method is problematic. The Work Group shall also review self-report and market data methods used in other states and make recommendations to improve reliability of the results of each of these methods when selected, based on the selection guidelines, to determine program attribution. It is also appropriate for the Work Group to review the methods used to measure gross savings, such as engineering calculations and deemed savings, and recommend improvements.

3) Should annual first year or life-cycle savings be established?

Life-cycle contract goals are to be established for energy efficiency and renewable resource programs. First year savings will be made available.

Life-cycle savings goals are appropriate because life-cycle savings reflect the true value of the programs. Establishing gross contract life-cycle goals will send a signal to those who

administer energy efficiency programs that they should target measures that continue to provide savings over a long period of time. First year savings are likely to continue to be publicly reported, as first year savings are more easily understood by the public and are most often used to compare program achievement across states. Because first year savings are necessary to determine life-cycle savings, this information will be readily available.

4) How should measure life, degradation, and acceleration be incorporated into the documentation of life-cycle savings?

The current effective useful life and decay rate approach shall be used to document life-cycle savings and accelerated savings shall be incorporated when feasible. The Evaluation Work Group shall consider alternatives to the current approach and recommend modifications.

It is appropriate to continue Wisconsin's current use of weighted effective useful life and degradation of savings over time until the Work Group can recommend modifications. Although estimating effective useful lives and degradation is based on theoretical expectations, using uncertain values is better than ignoring the issue.

B) Which cost-effectiveness tests are the most appropriate in the context of program approval, contract achievement, and societal benefits?

A modified Total Resource Cost (TRC) test shall be used at the measure and portfolio levels. Results of the Expanded test are to continue to be reported at the portfolio level. A Utility/Administrator test at the program level shall be conducted to inform program design. Measures that do not pass the modified TRC but have substantial non-energy benefits may be considered for program inclusion on a case-by-case basis based on the Expanded test.

In Phase One of this Quadrennial Planning Process, the Commission determined that the primary focus of the energy efficiency and renewable resource goals should be reducing energy use and peak demand. Requiring individual measures and the business and residential program portfolios to pass the modified TRC test is consistent with this focus on energy use and peak

demand. However, non-energy economic benefits of the programs, such as non-economic[3] externalities, water savings, and improved productivity, are important. Therefore, it is important to continue to report the results of the Expanded test, which includes these non-energy economic benefits, at the portfolio level. Because the TRC test does not provide guidance for appropriate program design, programs must pass the Utility/Administrator test in order to ensure ratepayers receive benefits greater than the costs of the programs. Also, it may be appropriate to include in programs some measures that do not pass the TRC test based on the measure's ability to become cost-effective in the future or the measure's ability to add value to the package of measures included in a program. Using the Expanded test for measures that do not pass the TRC test but have substantial non-energy benefits will allow these measures to be included, on a case-by-case basis, in programs.

A) How should the costs and benefits associated with energy efficiency and renewable resources be quantified?

1) What is the appropriate basis for calculating avoided costs which are used to value the benefits of energy efficiency?

Avoided costs shall be based on the most recent three-year historical average of locational marginal pricing (LMP) and avoided capacity costs based on the cost of a new peaking plant.

The primary objective of energy efficiency and customer-sited renewable resource programs is to reduce energy and demand. LMPs directly represent the avoided energy costs. Basing avoided costs on the generation resources included in the Renewable Portfolio Standard (RPS) is not reasonable until energy efficiency and customer-sited renewable resources either can be used to meet the RPS or are competing against renewable resources in a carbon-constrained future. 2009 Wisconsin Act 406 does allow customer-sited renewable

[3] Non-economic externalities have values set by regulatory or public policy but do not translate into direct market effects. Mercury pollution from coal-fired electric generation is currently an example of a non-economic externality.

resources that displace electricity from "conventional" public utility resources to create renewable resource credits. The act requires the Commission to promulgate rules that implement the new law, and when these new rules take effect the Commission may want to reconsider its decision. LMPs can fluctuate substantially over the four-year planning period. In order to minimize this fluctuation, it is appropriate to use the most recent three-year historical average of LMPs as the basis for avoided energy costs. Avoided capacity costs are to continue to be valued at the cost of a new peaking plant.

2) What is the appropriate discount rate to use for benefit/cost modeling?

A real discount rate of 2 percent shall be used for the benefit/cost modeling of energy efficiency programs.

A discount rate of 2 percent reflects the public policy objective of achieving a least cost, sustainable energy resource system. It also provides the appropriate balance between the short- and long-term societal benefits provided by energy efficiency programs. The Commission's decision regarding the use of a 2 percent discount rate is limited to benefit/cost modeling of energy efficiency and customer-sited renewable resource programs.

3) How should carbon be valued over time?

A levelized carbon value of $30 per ton shall be used in the benefit/cost modeling of energy efficiency programs.

Use of a levelized carbon value of $30 per ton appropriately reflects the higher expected market costs of carbon in the future. Also, because a value of $30 per ton was used in the Potential Study, using this value for cost-effectiveness assessment will ensure consistency between the identified potential and the programs designed to achieve that potential. The Commission's decision regarding the use of a levelized carbon value of $30 per ton is limited to benefit/cost modeling of energy efficiency and customer-sited renewable resource programs.

4) How should the cost-effectiveness of renewable resources be evaluated?

The cost-effectiveness of customer-sited renewable resource measures and programs shall be determined in the same manner as energy efficiency measures and programs. Public policy shall dictate the extent to which renewable resource measures that are not cost-effective should be included in the portfolio of programs in order to meet public policy objectives.

Determining the cost-effectiveness of renewable resource measures and programs in the same manner of energy efficiency programs allows a direct comparison between these two valuable resources. However, customer-sited renewable resources have specific attributes that are not adequately reflected in the standard cost-effectiveness tests. It is therefore appropriate for public policy to guide decisions regarding the inclusion of customer-sited renewable resources in the residential and business program portfolios. Commission staff shall develop criteria, for Commission approval, to guide decisions regarding incorporation of renewable resource measures that do not pass the modified TRC test into Focus on Energy's portfolio of programs.

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